

## ABSTRACT

There is provided a process for producing an SOI wafer in which, when producing an SOI wafer using Smart Cut technology, the surface can be smoothed after  
5 cleaving, the thickness of the SOI layer can be reduced, and the film thickness of the SOI wafer can be made uniform. In this process for producing an SOI wafer, hydrogen gas ions are implanted via an oxide film in a silicon wafer that is to be used for an active layer, so that an ion implanted layer is formed in the silicon bulk. Next, this active layer silicon wafer is bonded via an insulating film to a base wafer. By heating this base  
10 wafer, a portion thereof can be cleaved using the ion implanted layer as a boundary, thereby forming an SOI wafer. After the cleaving has been performed using the ion implanted layer as a boundary, the SOI wafer undergoes oxidization processing in an oxidizing atmosphere. This oxide film is then removed by, for example, HF solution. Thereafter, the SOI wafer undergoes heat processing for approximately three hours in an  
15 argon gas atmosphere at 1100 °C or more. As a result, the root mean square roughness of the SOI wafer surface is improved to 0.1 nm or less.